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ACCEPTED/FILED

JAN 30 2015

Federal Communications Commission
Office of the Secretary

January 9, 2014

Via Electronic Mail

Roger Noel
Chief, Mobility Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th St SW
Washington, DC 20554

DOCKET FILE COPY ORIGINAL

Re: Request for Waiver of Section 90.219(e)(5) of the Rules

Dear Mr. Noel,

Bird Technologies, pursuant to Sections 1.3 and 1.925 of the Federal Communications Commission's ("FCC" or "Commission") rules, hereby requests a waiver of Section 90.219(e)(5)[1] of the Commission's Rules with respect to the Signal Booster III labeling of the booster as a Class A or a Class B booster. As detailed below, our booster should have a Class A and a Class B booster designation as it is configured by the customer after shipment. As discussed below, waiver of these rules would be frustrated by its application and is in our customer's interests.

I. Background and Description of the Signal Booster III's intended use

The Bird Signal Booster III is a sophisticated industrial signal booster using Digital Signal Processing (DSP) technology to provide a wide range of digital filter choices to the end user. It is possible to program digital filters as narrow as 5 kHz and as wide as 1.5MHz centered at any frequency within the licensed range using the currently implemented FPGA firmware. Filter widths are chosen entirely at the discretion of the user, but are driven by immutable real-world constraints.

Regulatory language for signal boosters has probably evolved from existing language used for radio transmitters. A transmitter may employ narrow filters and complicated modulation formats designed to achieve the highest information entropy in the smallest signal bandwidth. Audio or digital signals are encoded onto an RF carrier with phase or amplitude modulation or some combination of both. The processing time required for the encoding, or latency is of little consequence as long as it doesn't become so great that it interferes with normal human communications. However, contemporary transceiver systems often restrict RF latency between base stations and subscriber units in order to constrict coverage range and prevent interference to stations which might re-use frequencies. This maximum delay, or "Time of Flight", for RF channels may be restricted to

[1] 47 C.F.R. Ch. I at SS 90.219 (e)(5)

something on the order of 100 uS and Simulcast radio systems may further restrict total RF delay to half of that number.

For this reason, a signal booster inserted into the RF signal path between subscriber and base station may only be allowed to add additional signal delay on the order of 30 to 50 uS. A 12.5 kHz wide DSP filter with 0.1 dB of ripple and 60 dB of rejection of the adjacent 12.5 kHz channel would have a signal delay (group delay) of approximately 250 uS, which is unacceptably long for many communications systems. The group delay is set by the mathematics of the DSP and cannot be avoided. So in practice, a number of closely spaced communication channels are grouped together and filtered with a wider filter shape surrounding all of them. Filters wider than 75 kHz are often required to accomplish this. Choosing a filter this wide would artificially change the booster designation from Class A to Class B. Moreover, it is the customer who chooses the required filtering. A booster leaving the factory has the potential to be either one and it isn't known in advance which it will be. While the filter tool in our user interface could limit the implementation of filters wider than 75 kHz, this would make the booster unusable for the case described above (which occurs frequently).

As of now, a signal booster model must be certified as either class A or class B. To appeal to the end user we designed a versatile signal booster which is both Class A and Class B and is able to handle all of cases mentioned since each site is unique. We would not know before our booster leaves the factory which certification would be required. Therefore, our equipment would have to be labeled as both Class A and Class B and have the certification number designated as both.

It is understood that the intent of the regulation is to insure that booster systems passing wide bandwidths (Class B), which may include frequencies unlicensed by the user should be registered with the FCC, while systems with narrow filters only, (Class A), are assumed to be amplifying only licensed, site specific frequencies. If this is the intent, then the onus should be on the user of the signal booster to register it as advised by language in the equipment manual based on the particular filter requirements at a site.

II. Waiver Standard

To obtain a waiver of the Commission's rules, an applicant must demonstrate either that: (i) the underlying purpose of the rule at issue would not be served or would be frustrated by its application, and that a waiver is in the public interest; or (ii) in view of the unique circumstances, application of the rule would be inequitable, unduly burdensome or contrary to the public interest.[2] The Commission may also waive any provision of its rules "on its own motion or on petition if good cause therefore is shown."[3] As documented below, Bird Technologies' waiver request meets these standards.

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[2] 47 C.F.R. SS 1.925(b)(3)

[3] 47 C.F.R. SS1.3. Waiver is appropriate if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest.

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III. The Commission should waive Section 90.219(e) (5) for the purpose of allowing a booster to be labeled both a Class A and a Class B signal booster.

The Signal Booster III is able to be Class A and Class B while keeping intact the original purpose of the class distinction. We have warnings built into our booster's software user interface (UI) that notify the customer of the registration needed on Class B devices while still allowing the customer flexibility in the installations that are all unique. This will save the customer time and money to allow a booster to be purchased and configured as needed.

Some of our customers have stated that they will only purchase Class A signal boosters. It is our belief that in some situations they will encounter the group delay issues described earlier and will have a need to implement filters wider than 75 kHz in practice. It would be burdensome and contrary to public interest to provide a booster which is limited to filter widths less than 75 kHz only to have it returned to the factory in exchange for a Class B booster when a means can be provided for moving easily between classes with attendant communication of the regulatory registration requirement.

To ensure the customer is properly notified when the booster has been configured as a Class B device the UI will contain a check box (Image A) that will allow the customer to choose Class B mode and allow programming of filters greater than 75kHz. A warning will then be displayed stating that the booster will need to be registered since it is now acting as a Class B booster (Image B). If the customer has not selected the Class B check-box, then the UI will not allow a filter width to be programmed greater than 75kHz. If attempted, the user will receive a statement indicating that they must engage Class B operation as described above (Image C). This will insure the original intent of the Class A verses Class B designation.

On start-up, the booster validates the widths of programmed filters. If any are configured wider than 75 kHz and the booster is set to Class A mode an error screen as shown in image (D) will appear and the offending filter or filters must be corrected or the booster must be switched to Class B mode as described above.

The label that is affixed to the device will state: "WARNING: This is NOT a CONSUMER device. It is designed for ...or express consent of an FCC Licensee to operate this device. This booster can be configured as a Class A or a Class B signal booster. If configured as Class B signal booster (as defined in 47 CFR 90.219), You MUST register this signal booster online at..."

IV. Conclusion

In summary, Bird Technologies requests this waiver of Section 90.219(e)(5) of the Rules, so that our signal booster may be labeled and marketed as both Class A and Class B while providing ample communication to the end user of the special regulatory requirements of a Class B device should that mode be selected. We believe this meets the objective of that Commission Rule. A provision should exist for booster devices capable of supporting Class A and Class B signal boosters.

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Sincerely,

Amy Sanvido
On behalf of Bird Technologies
RF Design Engineer
440.519.2179
asanvido@birdrf.com

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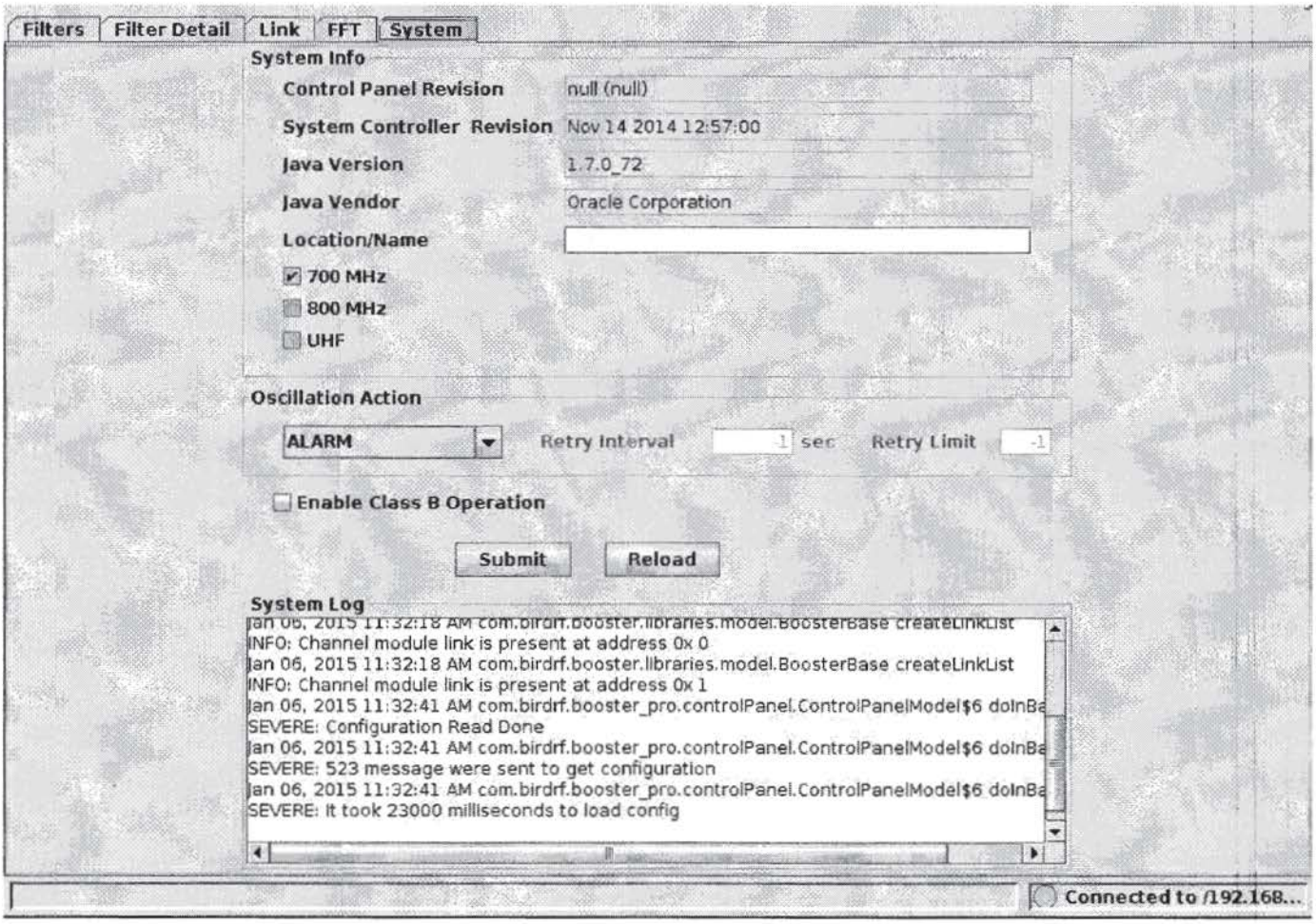

Image A: Systems Tab with "Enable Class B Operation" check box

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TX RX SYSTEMS • 8625 Industrial Parkway • Angola, NY 14006 • 716.549.4700 • www.birdrf.com
X-COM SYSTEMS • 12345-B Sunrise Valley Drive • Reston, VA • 703.390.1087 • www.xcomsystems.com
DELTANODE • Hammarby Fabriksväg 61, 6tr • SE 120 30 Stockholm, Sweden • +46.708.781.511 • www.deltanode.com

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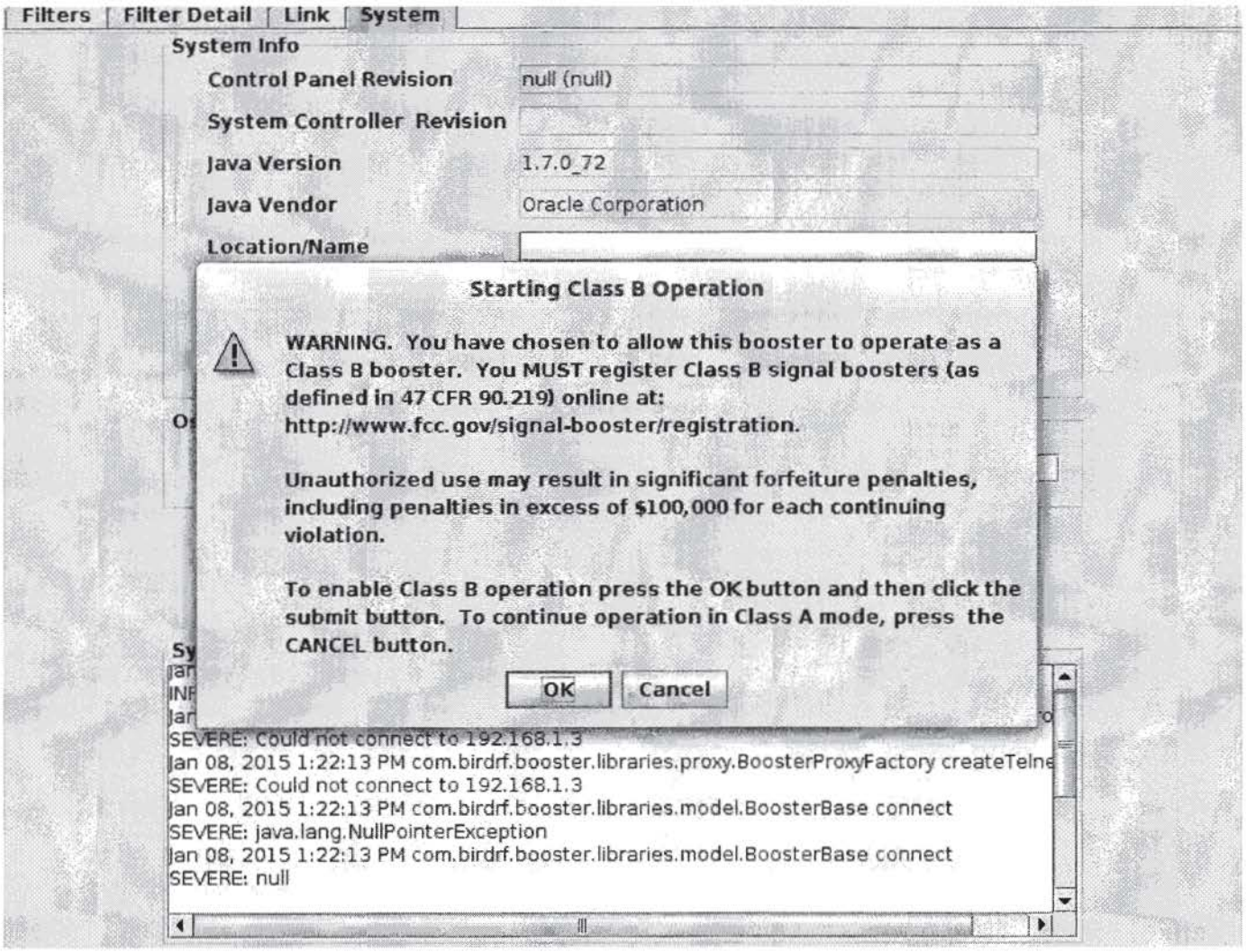

Image B: Registration Warning for Class B operation

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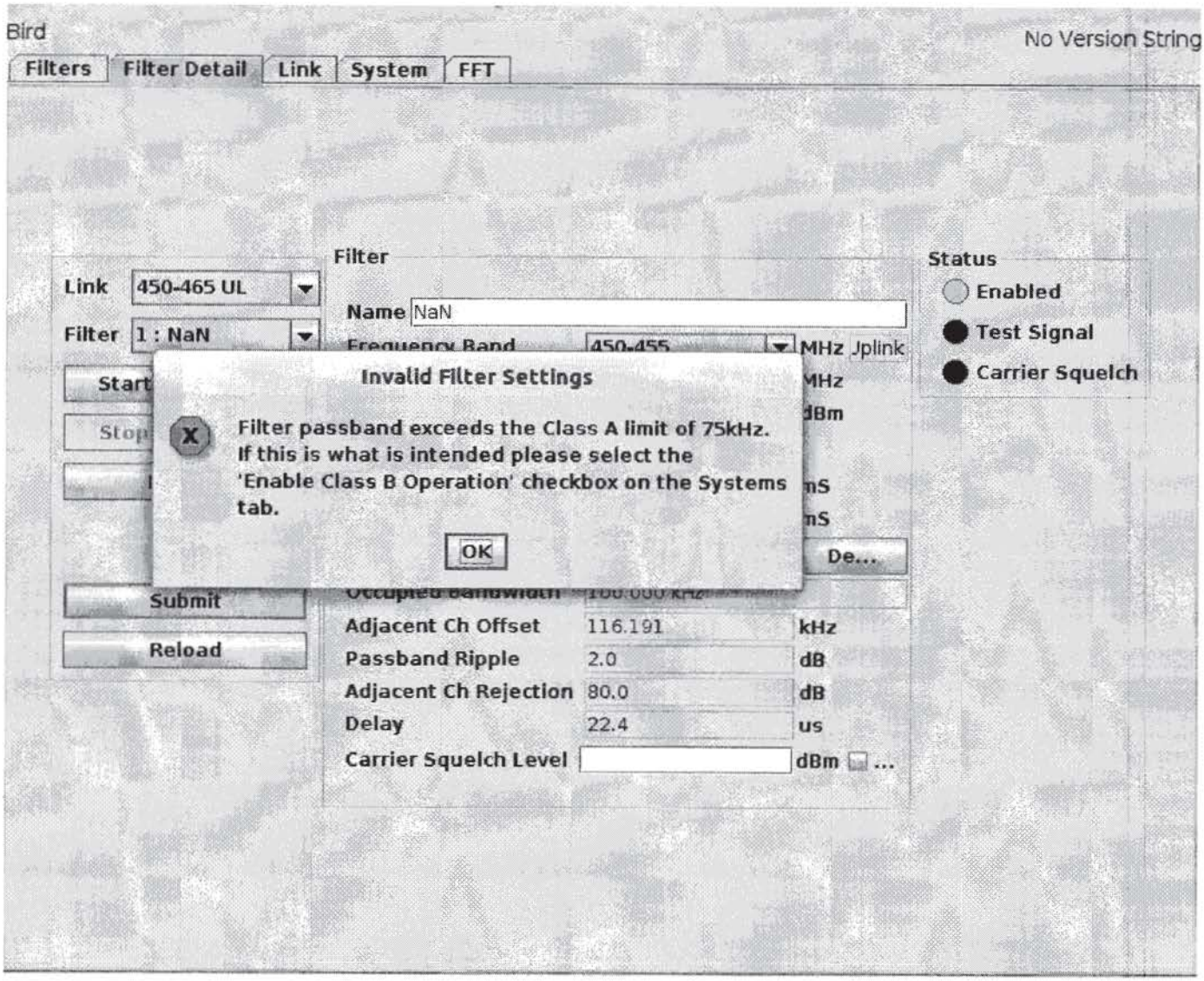

Image C: Error while in Class A mode

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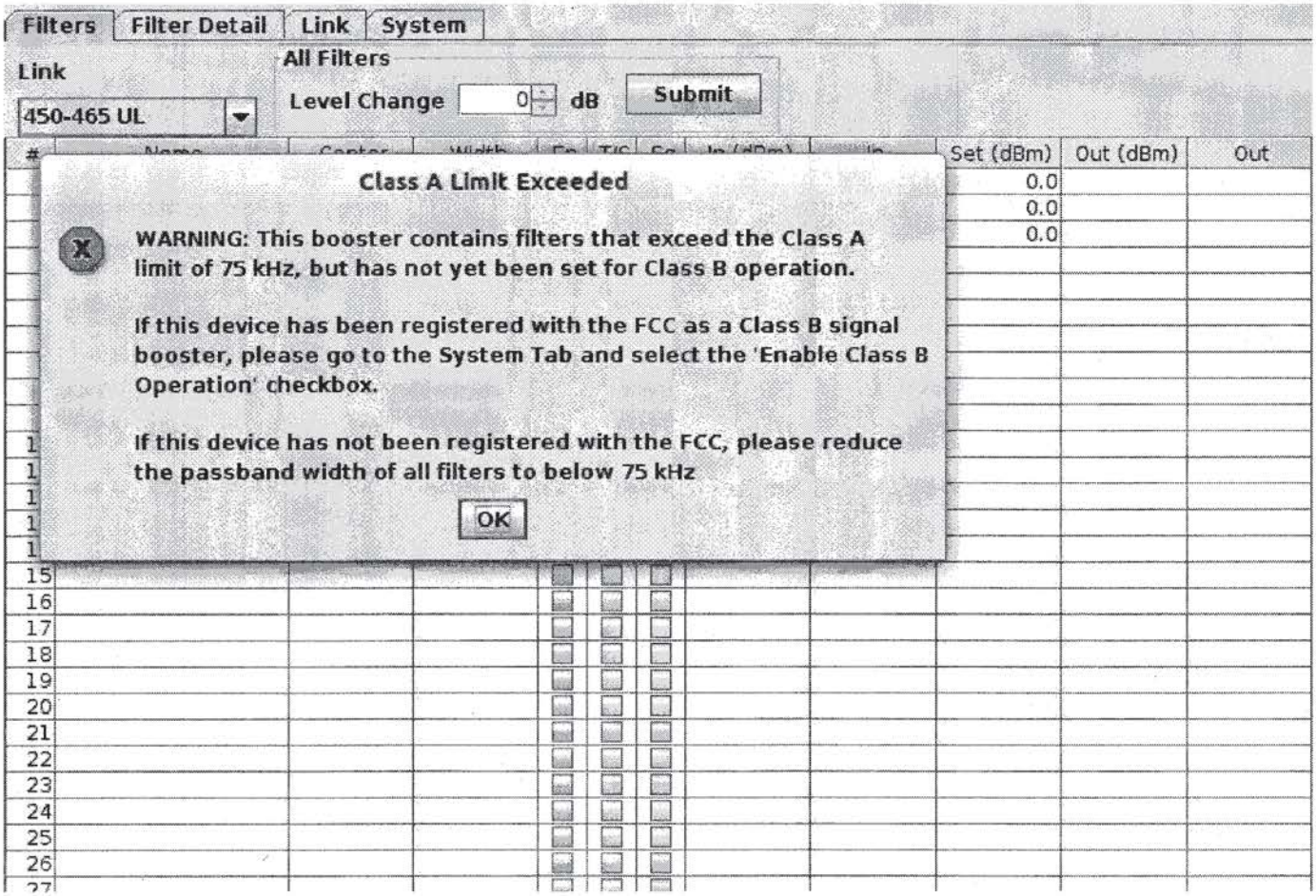

Image D: Error on System Check on UI start-up